

Kentucky Fruit Facts

March-April Newsletter 2020

<http://www.uky.edu/hort/documents-list-fruit-facts>

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Note: We will cease publishing Fruit Facts as a hard copy or mailed newsletter. If you would like to continue receiving Fruit Facts, please sign up for email delivery as described at the end of this newsletter or contact your County Extension Office to have them print a copy for you.

Fruit Crop News

John Strang, U.K. Extension Horticulturist, Daniel Becker, Extension Associate, and Matt Dixon, U.K. Ag Meteorologist

Spring is here and after our warm winter the peach bloom (masthead photo) was phenomenal. Figure 1 shows the accumulation of growing degree days (GDD) for 2020 in comparison with several previous seasons. The 2007 spring was the year of the devastating Easter freeze and a comparison shows that we are slightly behind in GDDs accumulations. So far, we are just slightly ahead of the 2019 season in terms of plant and floral development

The COVID-19 pandemic has everyone concerned and unsure about the future. The UK Center for Crop Diversification (CCD) has assembled an extensive list of resources to help Kentucky growers

deal with this. See the CCD March 2020 Newsletter at: <https://www.uky.edu/ccd/newsletter>

During pear bloom we had several days throughout the state where fire blight infection chances were high. Dr. Nicole Gauthier sent out information and instructions on using the UK Ag Weather Center/WKU Mesonet fire blight infection model previously on the Fruit Facts listserv. Apples are blooming and growers should run the fire blight model and track infection chances in their orchards. <http://weather.uky.edu/ky/agmodels.php>

While it is traditionally considered a little late for pruning most fruiting crops, those that did not have a chance to work on them earlier still have time to perform this necessary task. Pruning just before or during bloom can have some benefits for small growers with a few bushes or trees.

(1) Flowers are clearly visible, making it easier to selectively remove non-bearing shoots, favoring those that have blooms.

(2) For those less familiar with a crop or who are more cautious and unsure, waiting to prune until bloom can help with judgement and reduce the possibility of either under-pruning or over-pruning. It is easier to get a sense of the potential crop load when plants are in bloom (Figures 2 and 3).

(3) Severely damaged tissue is more easily distinguished with its blackened or tan, and dried appearance versus the green and firm feel of healthy tissue. However, damage is sometimes not readily apparent as seemingly healthy shoots can leaf out,



only to wilt later-on during hot and dry weather. Given the mild winter, it is unlikely that much tissue collapse due to freeze injury will occur this season, but if it does prune to remove the dead tissue as it becomes symptomatic.

(4) Similarly, during active growth, diseased tissue is more easily distinguished by its lack of blooms or leaves. Prune any cankers, galls or lesions at least 6 to 8 inches beyond the infected tissue. Fire blight is a special case. We do not recommend pruning older apple and pear trees during bloom due to the potential for spreading fire blight. Young trees are the exception as fire blight has a higher potential for killing the trees. On young trees prune the fire blight out as far below the infected area as possible and disinfect the pruning shears between cuts. Two products that work well for this are 70 percent alcohol or 10 percent bleach (1 part bleach to 9 parts water). On older trees to limit spread of the pathogen on pruning tools, delay removal until winter when the disease is no longer active. To make it easier to find next year, tie some flagging tape or any other brightly colored weather resistant material around the blighted tissue as identification (Figure 4).

As always, practice good cultural management by discarding pruned materials outside the orchard and destroying diseased tissue to eliminate potential sources of inoculum. Also, avoiding working around plants when they are wet can further help prevent the spread of fungal and bacterial diseases.

Plasticulture strawberries have been blooming for some time and growers in the southern part of the state will be harvesting in a week or two. Matted row strawberries should have had the straw raked off several weeks ago when the soil temperature at the 4-inch depth reached 43°F.

Take care and stay healthy!

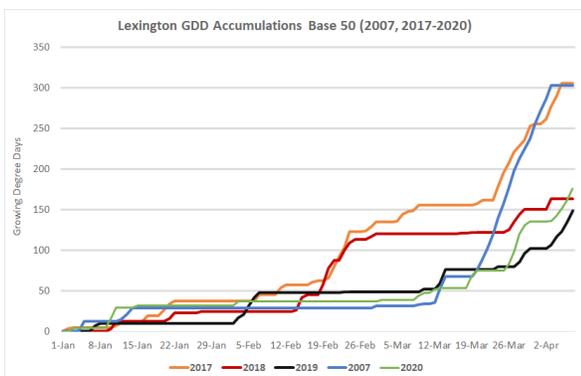


Figure 1. Growing degree day accumulations (base 50°F) for 2020 and past years.



Figure 2. Blueberries pre-pruning



Figure 3. Blueberries post-pruning



Figure 4. Flagging fire blight on apple for removal during the dormant season

- Consider the costs and benefits of a given crop
- Compare the pros and cons of selling at farmers' markets
- Evaluate opportunities and drawbacks of selling at larger farmers' markets
- Identify critical gaps in product availability to identify opportunities
- Weigh your prices against others in the state
- Compare these prices with your costs of production
- Make an informed decision about the benefits/costs of season extension for the farmers market.

We encourage you to avoid using this report:

- As a prescription for the right price for a given product
- To set your prices without considering your costs
- As a guarantee that demand exists for a product
- As a substitute for in-depth market research
- As anything other than a piece of supplementary information as you are setting prices and determining what to grow and market.

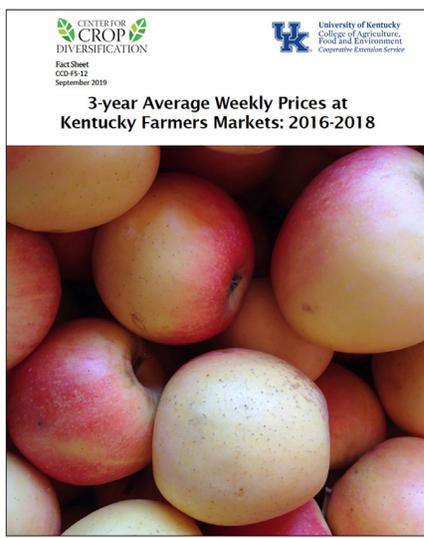


Figure 6

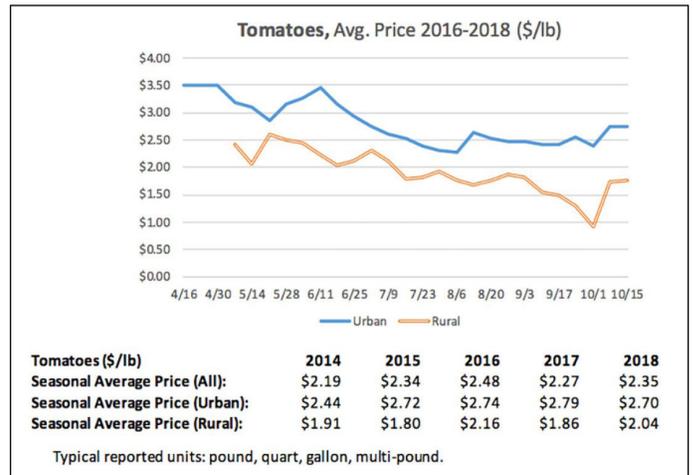


Figure 7



Preventing Bitter Pit in Apples

By Dr. David Lockwood, Univ. of Tennessee & Univ. of Georgia

Bitter pit in apples is the physiological breakdown of cells under the skin of the fruit causing slight depressions generally concentrated at the calyx end of the fruit where calcium levels are lower than at the stem end. While bitter pit generally shows up in storage, it may also be seen prior to harvest. Varietal susceptibility differs among varieties with Golden Delicious, Mutsu, Jonagold and Granny Smith being among the more susceptible. Honeycrisp appears to be especially vulnerable.

Bitter pit is closely related to calcium nutrition of the fruit. Calcium has an important role in cell development. When it is in short supply in the fruit, cell wall integrity is lost, resulting in the formation of the depressions. Good management includes having:

- adequate supplies of calcium in the soil
- good root and tree health
- sufficient water to move calcium into the tree
- appropriate crop load management

(WSU Tree Fruit, May 2018)

Calcium is relatively immobile in the tree. It can be in ample supply in the soil and the leaves, but in short supply in the fruit. While low soil levels of calcium can be implicated in the development of bitter pit, other factors may also be involved. Excessive levels of nitrogen, potassium or magnesium or fluctuating soil moisture levels during the growing

season can also cause bitter pit.

Bitter pit control actually starts before planting the orchard. When soil pH drops below 6.0, calcium availability is decreased. The ideal soil pH for apples is between 6.0 and 6.5. The upper 12 to 14 inches or more of the soil should be adjusted to this level prior to planting since no economically effective method of lowering subsoil pH exists once trees are in the ground. Take note of magnesium levels in the soil and do not apply dolomitic limestone if soil magnesium levels are high.

If soil pH is not low and magnesium levels are not high, bitter pit is likely to be caused by:

- Excessive nitrogen rates causing high tree vigor
- Over-fertilizing with potassium or magnesium since either can interfere with calcium uptake
- Light fruit set (poor pollination or overthinning)
- Uneven rainfall or irrigation
- Cooling delays after harvest

Depending on the level of bitter pit experienced, foliar applications of calcium may reduce or prevent the development of bitter pit. A 2018 article from Washington State University stated that foliar sprays of calcium should be started in late spring to early summer for the best effectiveness. A total of 5 to 15 pounds of calcium (15 to 50 pounds of calcium chloride) per acre per season should be used. This should be put out at the rate of 0.5 to 1.3 pounds of calcium (2 to 4 pounds of calcium chloride per acre) for each application with between 6 and 12 applications throughout the growing season.

NOTE: One pound of calcium chloride contains 0.34 pounds of actual calcium. Different products may vary in their actual calcium content. The following chart regarding total calcium applications over the season was developed by Dr. Rob Crassweller, Penn State University:

Actual Calcium (pounds per acre)	Expected Results
4 – 5	This is the lowest rate to use. It will give some control of bitter pit and corking, will not cause leaf burning, and is not likely to enhance storage performance

6 – 8	Should give good control of preharvest physiological disorders, should not cause any significant leaf injury, but will probably not enhance storage performance
9 – 11	Should give excellent control of corking and bitter pit, may enhance fruit storage life and should result in almost no leaf injury
12 – 14	The highest rate that should be used. Should give outstanding control of corking and bitter pit, may result in some enhanced storage life

Focus on Honeycrisp

Bitter pit can be a bigger problem with Honeycrisp (Figure 8) than almost any other apple variety since less of the calcium taken up by the trees is diverted to the fruit than in most other varieties. A study published in *The Goodfruit Grower* on 10/19/16 (“Beating Bitter Pit in Honeycrisp”), comparing calcium in Gala versus Honeycrisp showed:

In Gala, when calcium was partitioned between fruit and leaves, 86% of the calcium went to the leaves and 14% went to the fruit.

For Honeycrisp, more calcium went to the leaves and less to the fruit than Gala. In fruit analysis, Honeycrisp had one-half as much calcium as Gala. In this same article, it was suggested that full-season foliar sprays of calcium may only account for 40 to 50 percent of bitter pit control in good years and less than that in other years. The other half of the control resulted from reduced potassium applications that results in higher uptake of calcium.

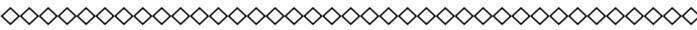
Methods to increase calcium in fruit include:

- Maintaining soil pH between 6.0 and 6.5. This should be done prior to orchard establishment.
- Consider using calcitic lime as opposed to dolomitic lime if soil test results show high levels of magnesium
- For existing blocks, consider gypsum applications in early spring to provide luxury calcium levels. While gypsum will not raise subsoil pH, it does move down in the soil much faster and further than lime.
- Keep boron and zinc at optimum levels as deficiencies will increase calcium disorders.

- Maintain magnesium and potassium at optimum levels as high levels of either can reduce calcium uptake.
- Use tissue analysis to monitor nutrient levels.
- Aim for moderate tree vigor and crop loads.
- Use foliar applications of calcium beginning as early as one week after petal fall and continuing until harvest.



Figure 8. Bitter pit on Honeycrisp



Pesticides, Respirators, and Covid-19

By Ric Bessin, U.K. Extension Entomologist

There is a critical need for N95 respirators for health care workers to deal with the increasing threat of Covid-19, which means that there are few, if any, respirators available in the marketplace for agricultural pesticide applications. Some herbicide, fungicide, and insecticide labels require these same N95 type respirators to protect from particulate exposure. At this time, review labels of products that you need in order to produce your agricultural commodities. Applicators who do not follow the label PPE requirements because they lack access to a respirator put themselves at significant risk, potentially adding to the need for medical care, and are in violation of the label.



Figure 9. Particulate filter respirators are in short supply due to the Covid-19 emergency



Figure 10. Respirators that protect users from organic vapors are not a substitute for particulate filter respirators

If you have pesticide products that require a respirator, check to see if there is an available alternative pesticide product (without a respirator requirement) or other management method. There may be a product with the same active ingredient, but the formulation type reduces the need for respiratory protection. Unfortunately, the only way to search for alternative products is to review pesticide labels. The CDMS label website (<http://www.cdms.net/Label-Database>) can be used to review and compare many pesticide labels. The PPE requirements are listed in the Precautionary Statements and WPS sections of the label.

Tree Fruit Fungicide Spray Schedule Worksheets

By Cheryl Kaiser, Extension Plant Pathology Support and Nicole Gauthier, Extension Plant Pathologist

Two worksheets have been developed to assist commercial tree fruit growers in designing appropriate fungicide spray schedules for their orchards. The worksheets can be used to plan sprays from dormancy through post-harvest. Sample spray guides are also included.

Both publications are available online. Commercial Peach/Stone Fruit Fungicide Spray Schedule Worksheet and Sample Spray Guide (PPFS-FR-T-23 - <http://plantpathology.ca.uky.edu/files/ppfs-fr-t-23.pdf>) Commercial Apple Fungicide Schedule Worksheet and Sample Spray Guides (PPFS-FR-T-19 - <http://plantpathology.ca.uky.edu/files/ppfs-fr-t-19.pdf>)



Figure 12

For additional publications on fruit diseases and their management, visit the UK Plant Pathology Extension Publications webpage.



Figure 11



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